

Unraveling social and economic problems: what basics of critical thinking skills are needed?

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ABSTRACT

Equipping knowledge and developing critical thinking skills about social and economic issues to students is important. This study aimed to analyze the ability of prospective students of Islamic State of Madrasah of Insan Cendekia (ISM-IC) to think critically about socioeconomic problems. This research reveals a critical thinking skills gap among prospective students of Madrasah Tsanawiyah/Islamic Junior High School (IJHS) and non-IJHS who participated in the national selection of new students (NSoNS). This study uses a cross-sectional survey approach with standard instruments from the NSoNS ISM-IC. Data was obtained from 1,832 participants in the social sciences group test, consisting of 1,197 people from IJHS and 635 from non-IJHS. Data analysis using R Programming, package 'ggstatsplot', and via Microsoft Excel. The result is: i) a gap in social studies scores between IJHS and non-IJHS students of -0.215, with the social studies scores of IJHS students lower than non-IJHS; ii) critical thinking skills are proven to have a very real impact on the occurrence of social studies score gaps, through the inability of students to answer the higher-order thinking skills (HOTS) category questions. This finding indicates the urgency of the education unit to provide nuanced literacy models and learning and HOTS to increase think of critic ability about socioeconomic matter.

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1. INTRODUCTION

Improving the quality of sustainable development goals (SDGs), especially education for sustainable development. The agenda for achieving quality education for SDGs point of four is contained in the UN World Agency's plan [1]. Several efforts to improve the quality of education have been made. Currently, education is beginning to be discourses by the advantages of neoliberalism, which has begun to override the principles and goals proclaimed [2]. This impacts changes in competence in several parts of the curriculum. Competency changes occur massively and structurally, which results in changes in the educational curriculum. Changes in the demands of educational competence in the curriculum are a necessity. The demands of changing competencies in education and learning in the 21st century focus on the skills needed by the business world and industry [3]. Changes in competence are contained in a new curriculum that has

been adjusted to the times. As a new industrial society entity, the world of education must have a curriculum by social industry [4]. The industrial social curriculum requires not only cognitive aspects but also non-cognitive abilities. Students who master non-cognitive abilities can be used as provisions in competing competitively in the industrial era [5].

A new paradigm is needed in education to increase students' competitiveness. The old paradigm of 3R (reading, writing, and arithmetic) should have become a school habit so that new ideas must be raised based on literacy, technological innovation, and life skills [6]. The world of education requires innovative pedagogical that contain new ideas in the industrial world [7]. Innovative pedagogical are needed to support and train the 4Cs (creativity, collaboration, communication, and critical thinking) of 21st-century skills to students. The 21st-century skills framework is a guideline for the world of education to experiment and expand academically. The ability that must be possessed in the 21st century becomes a new paradigm to produce the skills and careers of students in the future [8]. Clearly, this new paradigm will be challenged. The new paradigm is a challenge in the world of education; educators not only encourage knowledge but strengthen it with skills and character [9]. Many things encourage educators to develop creativity and innovation to face the challenges of student learning readiness in the 21st century. One of the factors that encourage 21st-century readiness is the advancement of digital and communication technology [10]. The development of digital technology, especially in the world of education, is the main capital to improve the skills of students in the 21st century. Digital technology helps improve 21st-century skills such as science and technology literacy, critical thinking, entrepreneurship, social responsibility, and career awareness that are valid and reliable on a multidimensional scale [11]; assessment is needed to improve the 21st-century skills of students [12]. Digital technologies and assessment systems will work well to measure 21st-century skills when they synergize with contemporary pedagogical models and approaches.

Critical thinking always has its own challenges in its implementation. Teachers and students have the perception that critical thinking is challenging in learning [13]. Critical thinking can provide challenges in learning in constructing a case study or phenomenology. The ability to think critically of students is born from constructing reflective thinking of a case into a decision. The conception of sensible reflective thinking focuses on deciding what to believe or do [14]. The practice of critical thinking is driven by reflective thinking [15]. The drive to know more deeply can also be habituated through several methods and media. Methods and media in general that can generate critical thinking practices include short videos [16], multimedia [17], student worksheet [18], and reading empowering modules [19], [20]. Practically, critical thinking can affect the environment and learning ecosystem. The learning environment affects the critical thinking ability of students. An active environment provides opportunities to demonstrate ideas and knowledge within the framework of critiquing a phenomenon [21]. Conversely, a passive environment with few creative ideas, lack of recognition, weak memory drive, and no mutual support results in individual dominance [22]. The transfer of critical thinking skills becomes hampered if the environment does not support students in developing the learning process. The learning environment becomes sensitive to the results of critical thinking skills [23].

Learning and evaluation activities in junior high schools (JHS) and Islamic junior high school (IJHS) have not been fully designed to develop critical thinking skills. Based on the learning outcomes shown by the critical thinking ability of JHS/IJHS, students are still in the low category [16], [24], [25]. The role of schools and teachers in structuring learning and evaluation to develop critical thinking skills is needed. The humanist and meaningful learning model is the teacher's choice in inviting students to understand a context [26]. A formative assessment model is needed to improve critical thinking [27]. The social studies question instrument developed in national selection of new students (NSoNS) Islamic State of Madrasah of Insan Cendekia (ISM-IC) is designed for reasoning and literacy-based questions that demand students' critical thinking skills. The demands of critical thinking are very important because they will describe the skills needed today. In accordance with the opinion [28]–[30], critical thinking skills are important competencies that are indispensable both in learning and work and in personal life. This was also conveyed [31], who stated that critical thinking skills are important to learn in the 21st century.

Highlighting the importance of critical thinking skills and socioeconomic problem-solving for prospective learners, ISM-IC is motivated appropriate ways of classroom teaching and approaches that focus on the transfer of knowledge, skills, and attitudes. ISM-IC is motivated by the idea that critical thinking can be taught and learned through appropriate classroom teaching methods and approaches that focus on the transfer of knowledge, skills, and attitudes. This is in line with the importance of critical thinking abilities and socioeconomic problem-solving for aspiring learners. In the social media age, the amount of information available and the way it is disseminated call for the development of critical thinking abilities. Navigating the future of work and prospects for workers emphasizes the importance of addressing the demands of an ever-evolving job market and advancing critical thinking skills in schooling [32].

2. METHOD

This research uses a cross-sectional survey study approach with standard instruments from the NSoNS ISM-IC. This cross-sectional survey was chosen because it is relevant to the research objective of unraveling social and economic problems through basic critical thinking skills on social studies scores between IJHS and non-IJHS students. NSoNS ISM-IC was attended by 13,911 students of class IX throughout Indonesia with test subjects for learning potential, mathematics, science, social humanities, English, Arabic, and Islamic tests. This fact makes it reasonable to use the results of the achievements of NSoNS ISM-IC participants of the Ministry of Religious Affairs of the Republic of Indonesia as a source of research data.

The feasibility of the instrument is known through the results of responses and decisions from expert test validators. The feasibility of the instrument is determined by a series of stages of writing test questions and decisions from expert test validators. The question instrument has been declared valid and worthy of being tested and meets the ethical clearance requirements. Data collection was carried out by all NSoNS participants in the socio-cultural sector, totaling 1,832 test takers consisting of 635 (35.00%) students from JHS and as many as 1,197 (65.00%) students from IJHS class IX throughout Indonesia. The research sample was taken purposively to see the distribution and proportion of schools. Research with small sample sizes is limited in that it provides a general understanding of the results, reduce the possibility of random fluctuation, increase accuracy and dependability, or facilitate the investigation of heterogeneity. It is critical to recognize these restrictions when interpreting and extrapolating study results. Sample size not effect to influence research outcomes [33].

IJHS are at an education level equivalent to JHS under the auspices of the Ministry of Religious Affairs of the Republic of Indonesia. This research study involved grade IX students aged 14-15 years. The data used in this study was not determined with a specific design because all test participants were from sociocultural groups. Table 1 lists the attributes of the research sample.

Table 1. Characteristic of population

| Variable | | Effective | Percentage |
|-----------|--------------|-----------|------------|
| Gender | Male | 617 | 34.00% |
| | Female | 1,215 | 66.00% |
| School | Public JHS | 211 | 35.00% |
| | Private JHS | 424 | |
| Total | | 635 | |
| | Public IJHS | 907 | 65.00% |
| | Private IJHS | 290 | |
| Total | | 1,197 | |
| Residence | City | 501 | 27.00% |
| | Village | 1,331 | 73.00% |

The quantitative approach was applied to an adapted version of data analysis designed and developed by the University of New Jersey. The structure is not affected and is only simplified to be applied to JHS/IJHS. These modified tests are validated before being administered to learners. The instrument consists of 50 items related to the main themes of social and economic problems. Data is treated through R Programming package 'ggstatsplot' [34] and through Microsoft Excel. Descriptive statistical analysis is carried out to consider the results of learners' social test scores. The relationship between quantitative variables is studied through comparison of mean (M) and standard deviation for variable categories and relies on verification. The score of each variable that is a concern in the study is not based on the total score but is estimated with a modern test theory approach, better known as item response theory. The attributes or variables of the study were scaled (about-4 to 4) that theoretically followed the standard score ($M=0$, $SD=1$). The estimation of the score of each variable is carried out with the help of the package "mirt."

3. RESULTS AND DISCUSSION

Critical thinking is the use of cognitive skills and abilities that increase the likelihood of a desired outcome. Critical thinking skills involve the ability to solve problems, formulate conclusions, calculate possibilities, and make decisions. The development of competencies and a range of attitudes, including methodical thinking, open-mindedness, empathy, flexibility, and cognitive maturity, can promote and enhance critical thinking [35]. It also encompasses mental abilities like self-control, introspection, analysis, inference, explanation, synthesis, and methodical thought. In addition to encouraging problem-solving abilities, critical thinking also promotes autonomous, holistic thinking, effective communication, active citizenship, and decision-making [36].

The results of social studies test scores in NSoNS ISM-IC use instruments based on critical thinking indicators and knowledge dimensions. With the acquisition of data from as many as 1,832 students, the results of the analysis showed average social studies score of 0.05, which had a standard deviation of 0.76. The lowest social studies score at the private JHS level is -1.39, and the highest social studies score at the private JHS level is 2.56. The results of the social studies score range showed the lowest average at the private IJHS level of 3.45 and the highest average at the private JHS level of 3.95. The average results and standard deviation of social studies scores by school type are presented in Table 2, and the social studies scores in Figure 1.

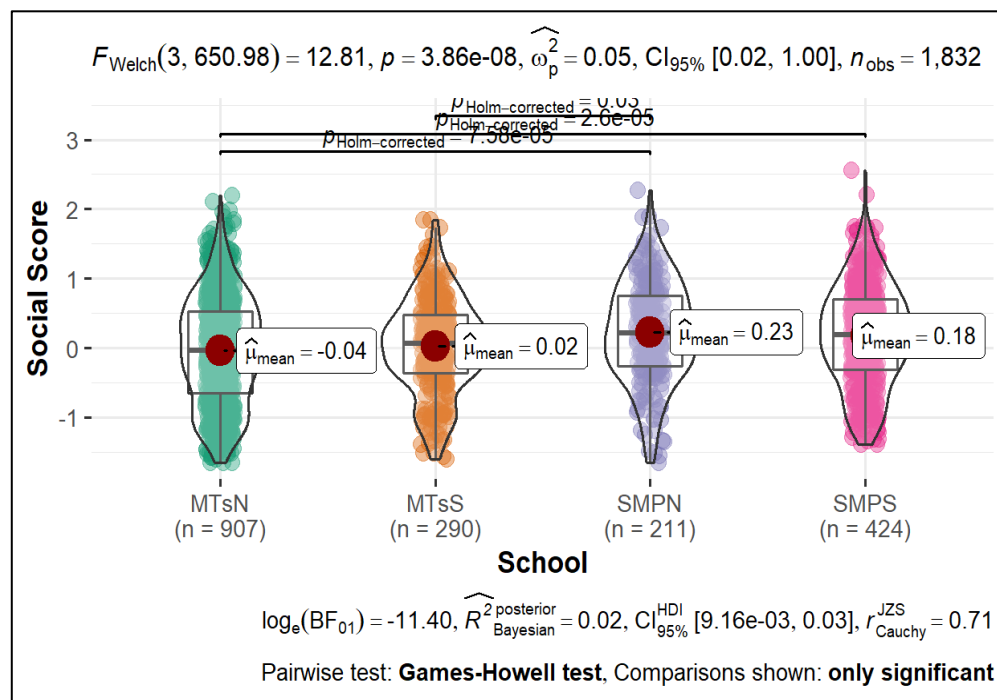


Figure 1. Graphic-based games-Howell test social studies score

Table 2. Means and standard deviations for social studies score by school type

| Type | n | M | SD | Min | Max | Range | Skew | Kurtosis |
|-------------|------|-------|------|-------|------|-------|-------|----------|
| IJHS Public | 907 | -0.04 | 0.78 | -1.65 | 2.19 | 3.84 | 0.06 | -0.65 |
| Private | 290 | 0.02 | 0.69 | -1.61 | 1.84 | 3.45 | -0.05 | -0.21 |
| JHS Public | 211 | 0.23 | 0.74 | -1.65 | 2.27 | 3.91 | -0.10 | -0.23 |
| Private | 424 | 0.18 | 0.73 | -1.39 | 2.56 | 3.95 | 0.02 | -0.41 |
| Total | 1832 | 0.05 | 0.76 | -1.65 | 2.56 | 4.21 | 0.00 | -0.48 |

Social studies scores obtained by test takers describe critical thinking skills. The findings showed that average social studies scores varied significantly of -0.21 between IJHS and non-IJHS students. The average score of non-IJHS social studies scores is higher than that of IJHS students. The results of the social studies score range based on gender show the average value as presented in Figure 2.

The findings showed that based on gender, there were significantly no differences in socioeconomic critical thinking skills between male and female participants. However, the average social studies scores of female students are higher than those of male students. The main effect of School is statistically significant and small ($F(3, 1,828)=12.86, p<.001; \eta^2=0.02, 95\% \text{ CI } [0.01, 1.00]$). Details of the comparison of pairs between schools are presented in Table 3. It shows significant findings; evidence was obtained that the average social studies score of Public JHS>Public IJHS, the average social studies score of Public JHS>Private IJHS, the average social studies score of Private JHS>Public IJHS, and the average social studies score of Private JHS>Private IJHS. Referring to these findings, junior high school students generally have higher socioeconomic critical thinking skills than IJHS students.

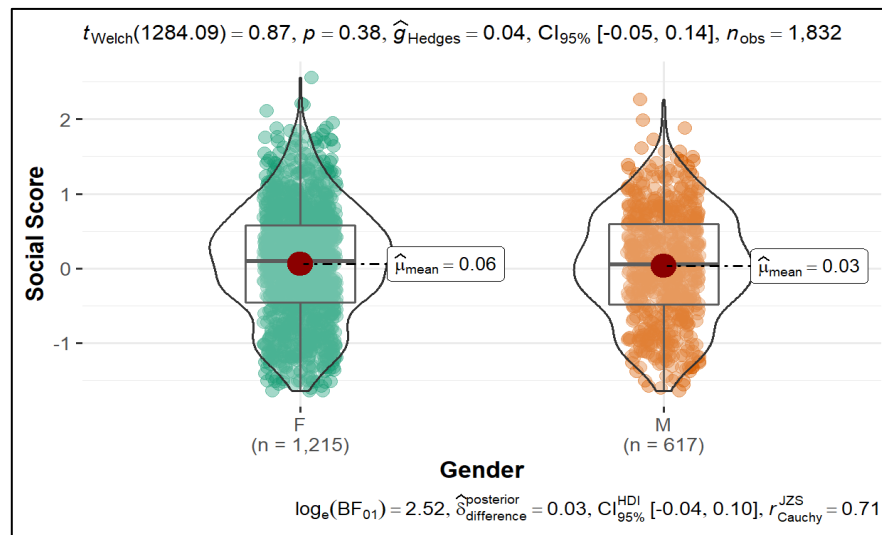


Figure 2. Social studies score based on gender

Table 3. Paired t-test mean difference of social studies score

| Group1 | Group2 | n1 | n2 | t | df | p.adj | signif |
|--------------|--------------|-----|-----|-------|--------|-------|--------|
| Public IJHS | Private IJHS | 907 | 290 | -1.38 | 547.66 | 1 | ns |
| | Public JHS | 907 | 211 | -4.79 | 328.25 | 0 | **** |
| | Private JHS | 907 | 424 | -4.99 | 873.21 | 0 | **** |
| Private IJHS | Public JHS | 290 | 211 | -3.19 | 432.72 | 0.01 | ** |
| Private IJHS | Private JHS | 290 | 424 | -2.86 | 647.95 | 0.03 | * |
| Public JHS | Private JHS | 211 | 424 | 0.85 | 417.78 | 1 | ns |

Indicators of critical thinking ability measured in this study are interpreting, analyzing, inferring, and explaining [28]–[30]; determine one's success in life, thinking skills are among the many life skills that must be cultivated through schooling. The methodical process of analyzing the facts, presumptions, and reasoning behind one's own and other people's beliefs in order to gain a comprehensive understanding that may influence one's course in life is known as critical thinking [37], [38]. In general, critical thinking skills is crucial to prepare individuals to face rapid changes in demography, society, and economic aspects [39].

Learners need to possess critical thinking, problem-solving, empathy, ethics, and other human qualities that machines cannot match, as well as agility. Appropriate classroom instruction can facilitate the teaching and learning of critical thinking abilities. In the social media age, the amount of information available and the way it is disseminated call for the development of critical thinking abilities. Furthermore, critical thinking abilities are becoming more valued by businesses in their workforce. The ability to think critically is crucial for the workplace of the future as well as for bringing attention to the intricate global community. Critical thinking abilities and resistance to automation in the workplace are necessary given the possible effects of artificial intelligence on employment disruption, salaries, and job polarization [40].

Based on the findings, verbal values tend to dominate rather than analysis. This result is in line with the results of research [30], [37], which stated that the analytical ability of students in Indonesia is still low. Low analytical skills also indicate low critical thinking skills. Many contend that verbalistic learning, or what we often refer to as lectures, is the reason why information is usually delivered verbally in the classroom. Boredom sets in quickly for teachers who speak constantly in class, making learning ineffective. Teachers use low standards when delivering and assessing student learning outcomes. Specifically, they only assess at the cognitive level—that is, only at the cognitive levels of cognitive one (C1) and cognitive two (C2) or at the knowledge and understanding level, which is lower than C3–C6 (application, analysis, synthesis, evaluation). In fact, if there are students who move here and there, who many ask, they will be categorized as naughty or unkind learners. Whereas children aged 13–15 years where psychomotor coordination is developing, play is group, less dependent on parents, contact with the outside environment is maturing, aware of the presence of nature around him, form is more influential than color, a sense of responsibility begins to grow, the peak of pleasure playing is at the age of 14 years.

Among other things, certain flaws in the way social studies are taught in schools and the reasons behind them, are as: i) lack of attention to changes in the objectives, functions, and roles of social studies learning in schools, and learning objectives are less clear and not purposeful; ii) there is a disregard for

positions, roles, and functional connections with other academic disciplines. Factual information uses less outside sources and more outdated textbooks; iii) weak transfer of information on social studies concepts, social studies learning outputs do not provide additional power and do not contain power; iv) teachers cannot convince students to learn social studies more passionately and seriously, and students are not taught to build independent conceptualizations; and v) teachers dominate students (teacher-centered), learning levels are low, and student learning needs are not served. Not yet acquainted with the social democratic life principles that are experienced via incorporating pupils and the whole school community in a variety of classroom and school-related activities. In local, national, and international contexts, class gatherings are not planned, particularly when it comes to social system structure and community behavior.

There are differences in social studies score results at the JHS/IJHS level, proving a problem. Most junior high school students score lower than junior high school students. This shows that students are weak in mastering socioeconomic concepts. This is in accordance with previous research [37], which claims that pupils are often silent and unable to voice their ideas during the learning process. Furthermore, the degree of misconceptions among students is significantly influenced by the teacher's capacity to impart knowledge. Due of their inability to voice their thoughts, pupils become dependent on other people rather than taking ownership of their decisions. The majority of pupils can only respond to questions with low score categories in each element, according to the data analysis results. It can be concluded, therefore, that the typical student has not been able to give precise, focused, and unambiguous responses, nor has the relationship between the replies and the questions been made evident. This is as a result of the questions being designed to gauge pupils' capacity for critical thought. There is a corresponding query [41].

The excellence of students' critical thinking skills can be seen by the way they think and the results of their performance in supporting current models such as spatial-based learning, problem-based learning, and problem-solving. Spatially, students can present the problem as a whole until the final solution proves that students' critical thinking skills are very good. The project emphasizes the active role of students in solving problems so that their thinking power increases and they are able to make a critical contribution to the environmental context [42]. Project-based worksheets are very effective in fostering students' critical thinking skills so that they are able to find the context of the problem to the final solution. Students' critical thinking abilities can be enhanced by implementing the flip model in their education when it comes to life skills and technology. Models that can give pupils experience with logical and reflective concepts are necessary for the development of their critical thinking abilities.

This test of critical thinking skills is administered using phenomenological case descriptions and pertinent information ideas. The source that will be connected to the questions that the student must respond to will serve as the stimulus. Not every inquiry has an answer that can be found in a stimulus. But in order for children to create their own responses by drawing on the information in the stimulus, the data and information must be examined. Students must therefore possess processing skills in order to be able to address challenges involving critical thinking abilities. These skills include assessing, evaluating, or synthesizing pertinent information to create arguments or reach conclusions backed by evidence [43], [44]. Students' critical thinking skills are formed through a literacy learning model based on intense problem-solving, providing measurable assessment, and practicing higher-order thinking skills. Developing the quality of students' critical thinking requires supporting components in learning activities, such as intensity and measurement instruments [13]. Critical thinking patterns will be formed through a series of continuous, intense efforts [45]. Focusing on creative problem-solving ideas, students are able to think critically well by providing new things for the development of the area studied. Critical thinking skills can generate a caring attitude that contributes to environmental problems [46].

4. CONCLUSION

Some of the findings in this study include, firstly, a gap in social studies scores between IJHS and non-IJHS students. The gap occurs in the achievement of a social studies score of -0.215, which indicates that IJHS students are lower than non-IJHS. Based on the average score, it can be concluded that the ability to answer the higher-order thinking skills questions of non-IJHS students is better than that of IJHS. Second, critical thinking skills are proven to have a very real impact on the gap in social studies scores between IJHS and non-IJHS students through the inability of students to answer the HOTs category questions. HOTs questions that have been answered by students can be believed to be the result of implementing learning in class. For students who score better when answering HOTs questions, the learning process in class has implemented critical thinking skills. Of course, this requires further research to obtain accurate and maximum results. This finding indicates the urgency of the education unit to develop literacy and HOTs nuanced model and learning efforts to improve students' critical thinking skills. Therefore, the need for schools to provide basic training on critical thinking skills about socioeconomic matter to students is urgent.




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